

Name _____ Binomial Distribution Due by the end of class Thursday

Which of the following are binomial experiments or can be reduced to binomial experiments?

- a. Surveying 100 people to determine if they like Sudsy Soap _____
- b. Tossing a coin 100 times to see how many heads occur _____
- c. Drawing a card with replacement from a deck and getting a heart _____.
- d. Asking 1000 people which brand of cigarettes they smoke _____
- e. Testing four different brands of aspirin to see which brands are effective _____
- f. Testing one brand of aspirin by using 10 people to determine whether it is effective _____
- g. Asking 100 people if they smoke _____
- h. Checking 1000 applicants to see whether they were admitted to Norwich University _____
- i. Surveying 300 prisoners to see how many different crimes they were convicted of _____
- j. Surveying 300 prisoners to see whether this is their first offense _____

A study found that 1% of Social Security recipients are too young to vote. If 800 Social Security recipients are randomly selected, find the mean and standard deviation of the number of recipients who are too young to vote.

2. Compute the probability of X successes, using BinoPDF

b. $n : 4, p : 0.60, x : 3$

d. $n : 10, p : 0.40, x : 4$

f. $n : 15, p : 0.80, X : 12$

h. $n : 20, p : 0.50, X : 10$

For Exercises 4 through 13, assume all variables are binomial.

4. A burglar alarm system has six fail-safe components. The probability of each failing is 0.05. Find these probabilities

- a. Exactly three will fail.
- b. Fewer than two will fail.
- c. None will fail.
- d. Compare the answers for parts a, b, and c, and explain why the results are reasonable.

7. In a survey, 30% of the people interviewed said that they bought most of their books during the last 3 months of the year (October, November, December). If nine people are selected at random, find the probability that exactly three of these people bought most of their books during October, November, and December.

9. In a survey, three of four students said the courts show "too much concern" for criminals. Find the probability that at most three out of seven randomly selected students will agree with this statement.

10. In a survey, 63% of Americans said they use voice mail. If 14 Americans are selected at random, find the probability that at least 9 use voice mail. Write the math expression:

11. In a survey, 58% of American adults said they had never heard of Netflix. If 20 American adults are selected at random, find the probability that exactly 12 will say they have never heard of the Netflix.

12. A survey found that 86% of Americans have never been a victim of violent crime. If a sample of 12 Americans is selected at random, find the probability that 10 or more have never been victims of violent crime. Does it seem reasonable that 10 or more have never been victims of violent crime?